

Particle Size Characterization

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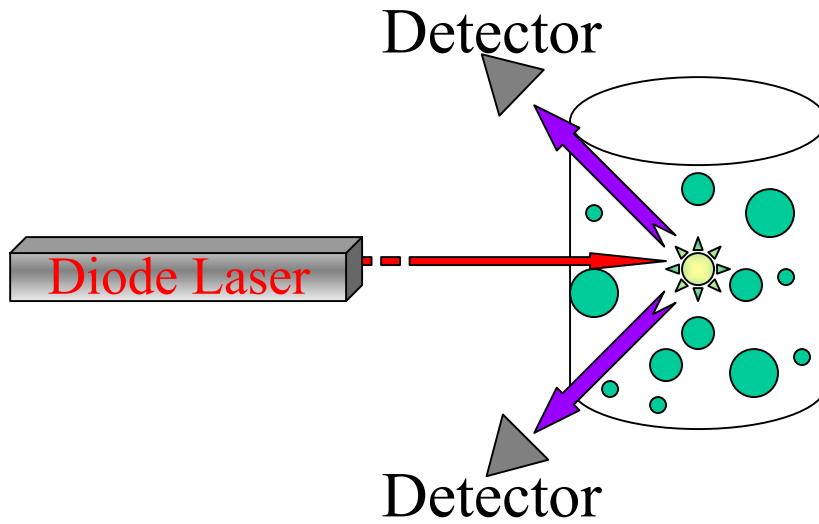
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94-1 R&D End Of Year Technical Review

Particle Size Measurement

Laser Scans Across Beaker
at a Constant Velocity



When Focal Spot Intercepts
a Particle, Some Light is
Backscattered and Collected
on the Detectors

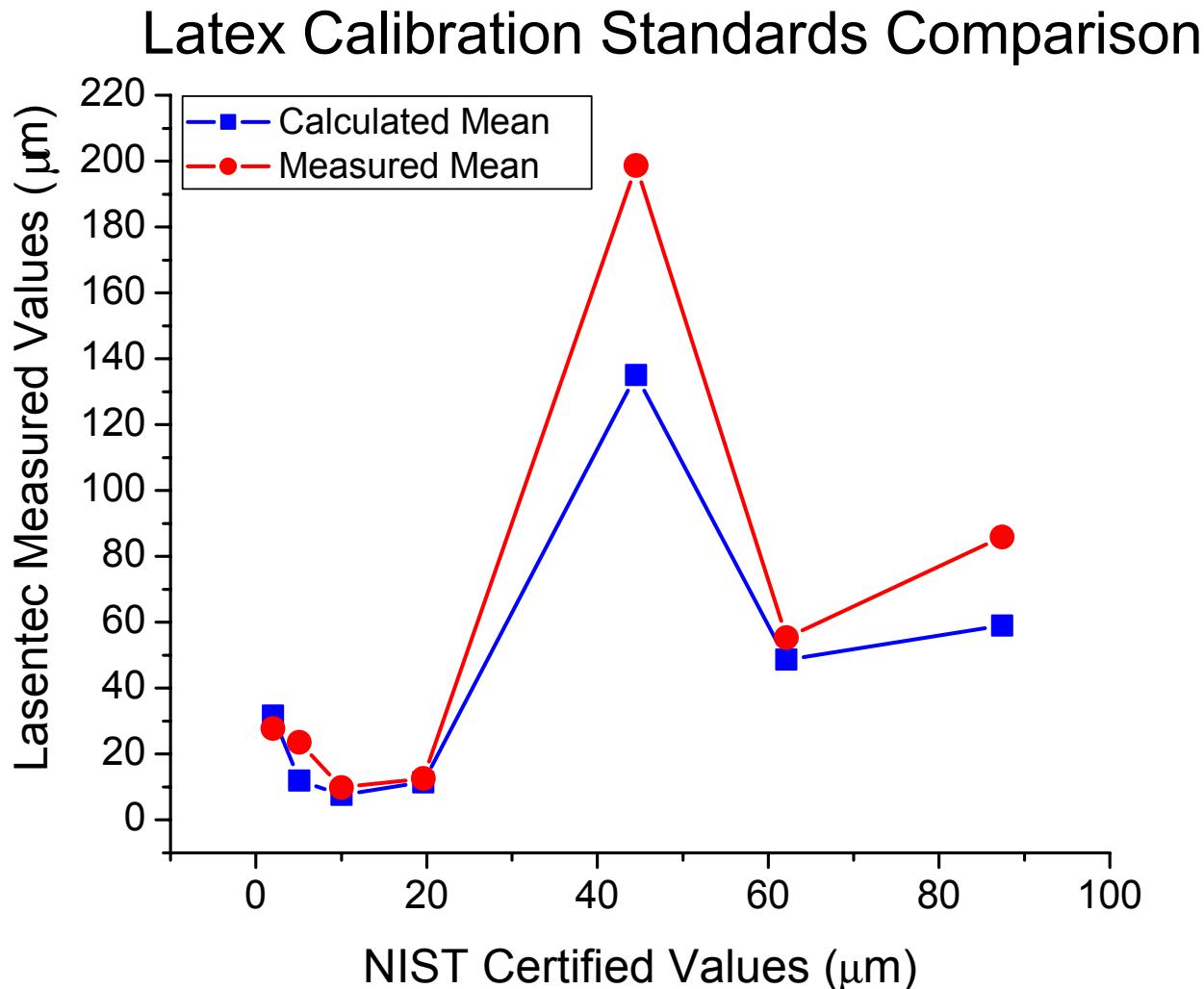
Particle Size is Calculated by $D = v/t$

Where, t = the time the laser illuminated the particle

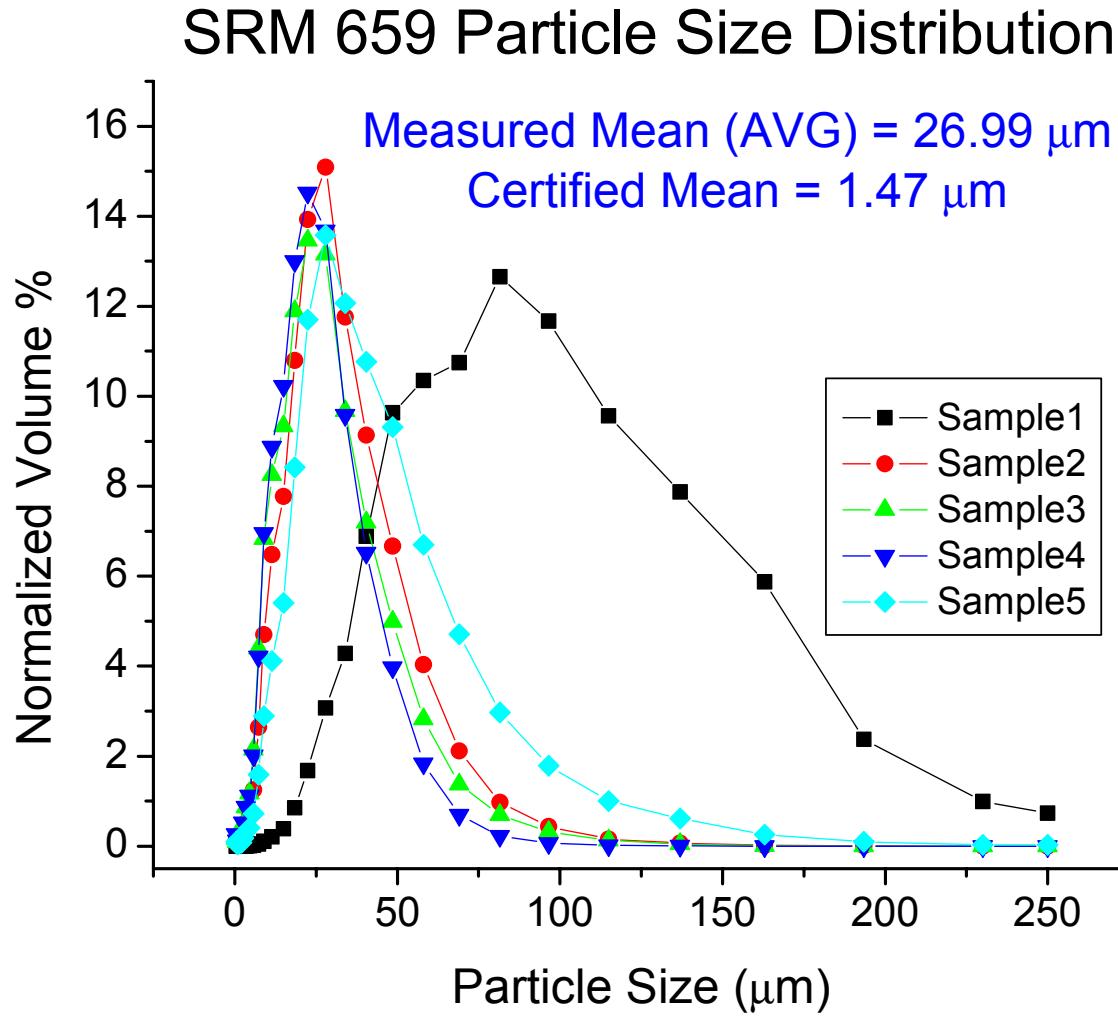
v = Scanning Velocity

D = Distance the Focal Spot Scanned Across the Particle

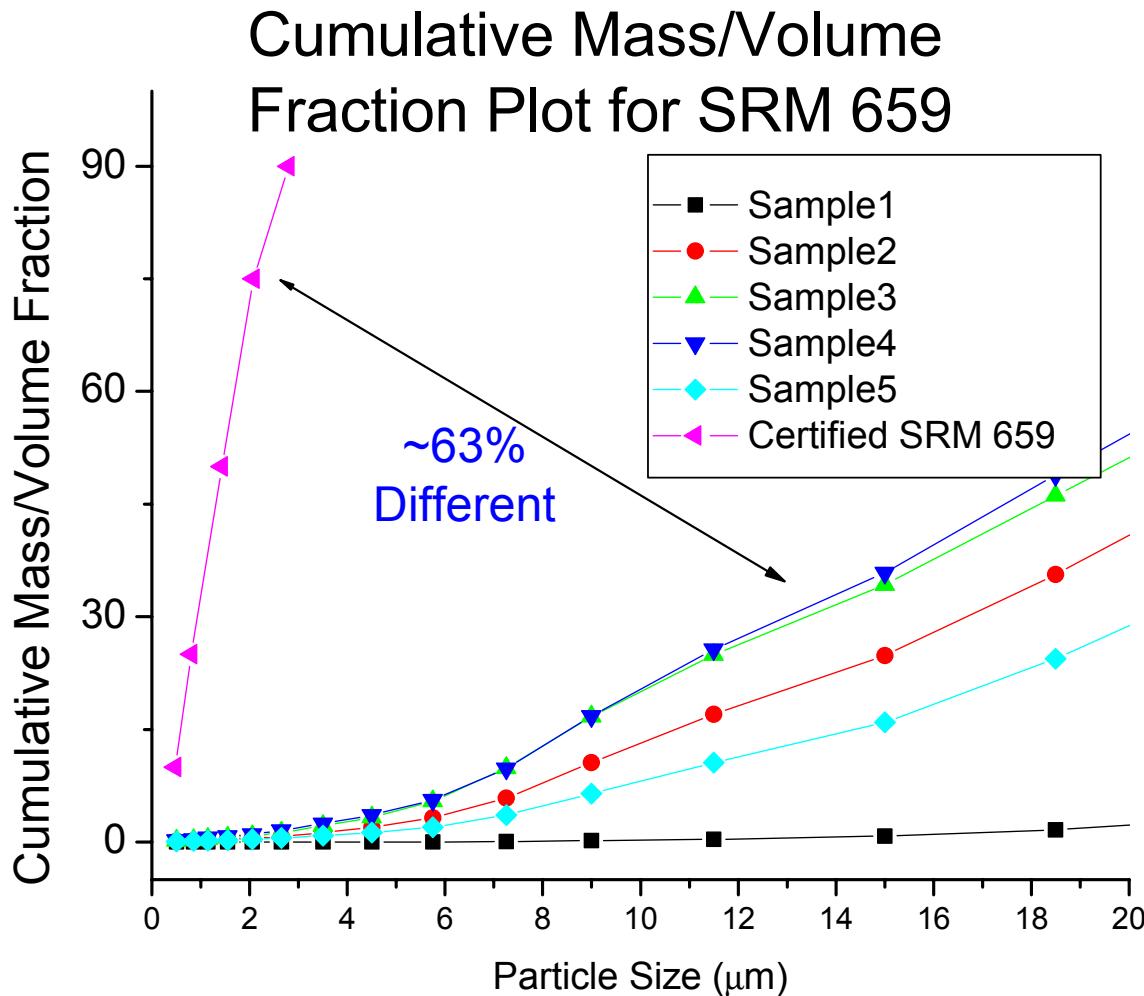
NIST Certified Polystyrene Latex Particles



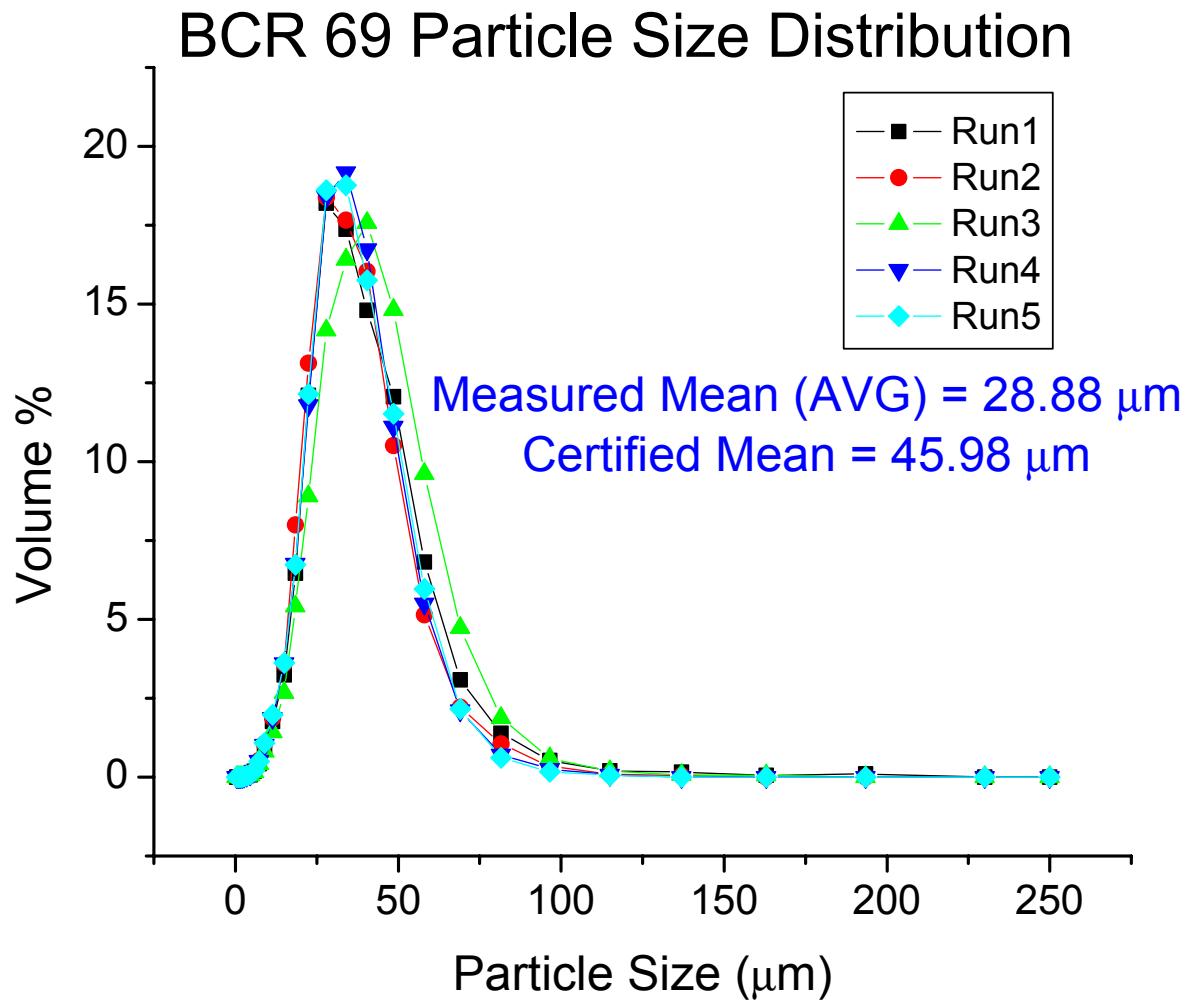
SRM 659 (SiN) Particle Size Standard



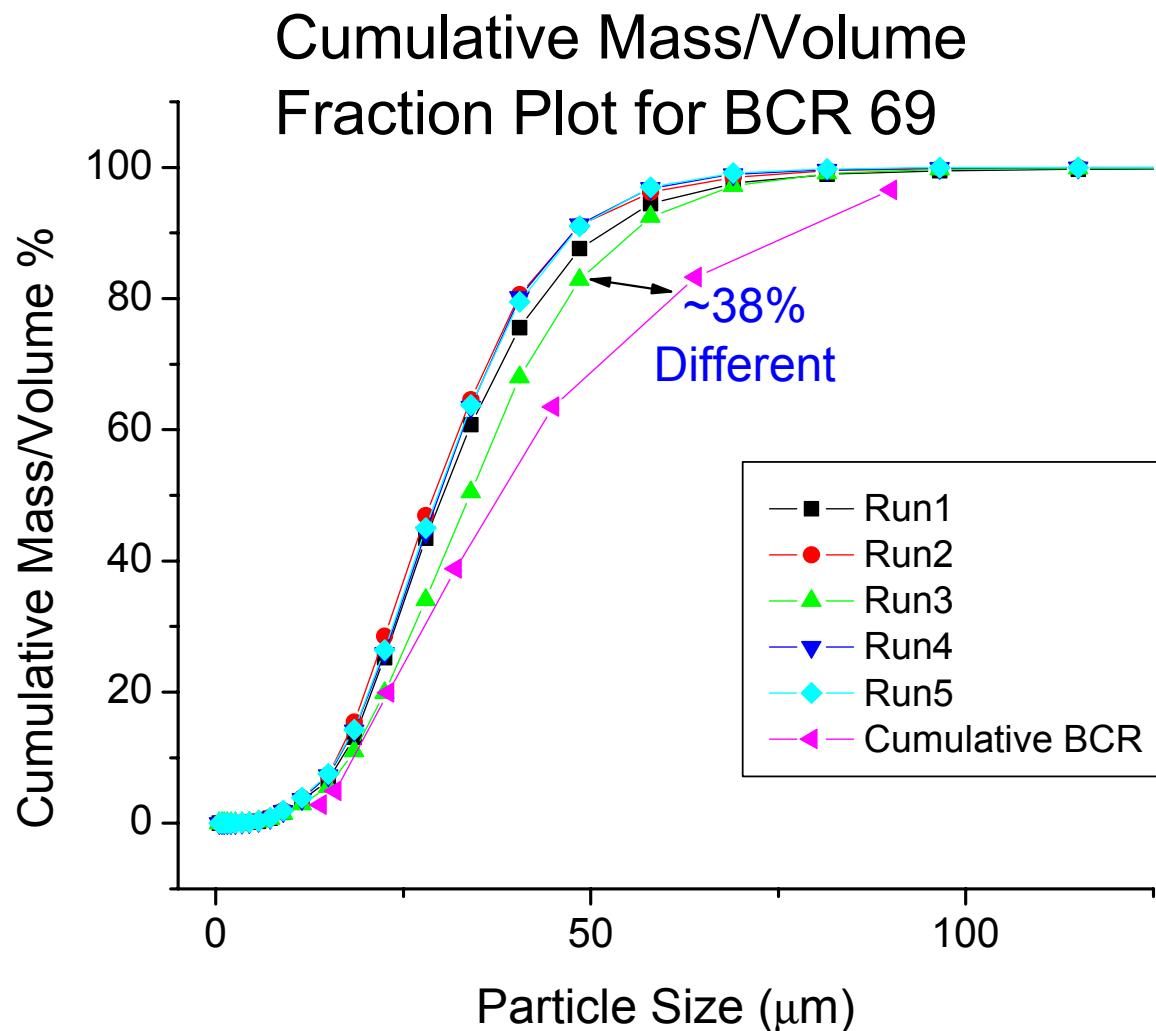
SRM 659 (SiN) Cumulative



BCR 69 (Quartz) Particle Size Standard



BCR 69 (Quartz) Cumulative



Conclusions

- Particle Size Data Obtained with LASENTEC LABTEC-1000 NOT accurate.
- Data is not systematically in error (overestimates for SRM659 and underestimates for BCR69), thus a correction factor cannot be applied to correct the data
- Two new particle sizers obtained to provide accurate data:
 - 1) Beckman-Coulter Multisizer 3 (Electric Sensing Zone / Coulter Method)
 - 2) Horiba LA-300 (Laser Light Scattering)
- Implementation of new QA/QC procedures to insure accurate data